



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/586,602

07/20/2006

Yoshiyuki Muraoka

043890-0932

5740

53080

7590

11/04/2009

MCDERMOTT WILL & EMERY LLP

600 13TH STREET, NW

WASHINGTON, DC 20005-3096

EXAMINER

ARCIERO, ADAM A

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

11/04/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/586,602	Applicant(s) MURAOKA ET AL.	
	Examiner ADAM A. ARCIERO	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-8 is/are pending in the application.
- 4a) Of the above claim(s) 5-8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1795

NONAQUEOUS ELECTROLYTE SECONDARY BATTERY

Examiner: Adam Arciero

S.N. 10/586,602

Art Unit: 1795

October 30, 2009

DETAILED ACTION

1. The Applicant's amendment filed on July 28, 2009 was received. Claims 3-8 are currently pending. Claim 3 has been amended. Claims 5-8 are newly added.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Election/Restrictions

3. Newly submitted claims 5-8 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The subject matter of the aforementioned claim is a nonaqueous electrolyte battery comprising a positive active material mixture comprising two lithium based complex oxides which provide the battery with a discharge curve having a plurality of step-like inflection points, which is a distinct species from a nonaqueous electrolyte battery comprising a positive active material mixture comprising two lithium based complex oxides which provide the battery with a discharge-end voltage within 2.5V to 3.0V and wherein said second active material has an average discharge voltage within 2V to 3V, as recited in the original claims.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution

Art Unit: 1795

on the merits. Accordingly, claims 5-8 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 103

4. The 35 U.S.C. 103(a) rejection as being unpatentable over HATAZAKI et al. and HOSOYA et al. on claim 3 is withdrawn, because Applicant has amended claim 3.

5. The 35 U.S.C. 103(a) rejection as being unpatentable over HATAZAKI et al., HOSOYA et al. and YAMASHITA et al. on claim 4 is withdrawn, because Applicant has amended claim 3.

6. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over OISHI et al. (US 4,943,497) in view of YAMASHITA et al. (US 6,387,564 B1) and HOSOYA et al. (US 2004/0076882).

As to Claim 3, OISHI et al. discloses a nonaqueous electrolyte secondary battery comprising a positive electrode comprising a mixture of two lithium complex oxides (col. 14, lines 30-43), a negative electrode comprising a material capable of doping and dedoping lithium ions (col. 10, line 66 to col. 11, line 2), a separator comprising a nonaqueous electrolyte impregnated therein (col. 1, lines 60-63). Furthermore, OISHI et al. discloses wherein said positive active material comprises one composite oxide represented by $\text{Li}_x\text{Ni}_y\text{Co}_{1-y}\text{O}_2$ where $0.2 \leq x \leq 1$ and $0 < y < 0.5$ (col. 14, lines 44-46), and further comprising a second composite oxide such as a small amount of LiMnO_2 (col. 14, lines 30-43). OISHI et al. further discloses wherein the added amount of the second composite oxide active material is 2-50 parts by weight of the

Art Unit: 1795

total cathode active material (col. 10, lines 58-61). OISHI et al. does not specifically disclose wherein the amount of LiMnO_2 as the second active material is added in an amount of 5-20% of the total active material. OISHI et al. further does not specifically disclose the first active material represented by composite "A" in claim 3 or the discharge-end voltages.

However, YAMASHITA et al. teaches a nonaqueous electrolyte battery comprising a positive active material of $\text{Li}_x\text{Ni}_{1-y}\text{O}_2$ or $\text{Li}_x\text{Co}_y\text{Ni}_{1-y}\text{O}_2$ wherein $0 < x \leq 1.1$ and $0 \leq y \leq 1$ (col. 8, lines 16-26). These ranges overlap or lie inside the claimed ranges of the present application. The courts have held that in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to substitute the active material of YAMASHITA et al. (Li_xNiO_2) for the first active material of OISHI et al., because YAMASHITA et al. teaches that this will achieve a battery which is excellent in discharging characteristics at a high current density and cycle characteristics (col. 3, lines 1-2). Furthermore, YAMASHITA et al. is clearly teaching that Li_xNiO_2 and the active material formula disclosed by OISHI et al. used as positive active materials are considered functionally equivalent. Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to substitute the Li_xNiO_2 active material of YAMASHITA et al. for the first active material of OISHI et al., because YAMASHITA et al. teaches that they are recognized equivalents.

HOSOYA et al teaches of a lithium-ion battery (nonaqueous electrolyte battery) comprising a negative electrode having an active material such as graphite which is capable to

Art Unit: 1795

dope and dedope lithium (pg. 4, [0057]), a positive electrode having a positive active material of a first active material and a second active material of lithium transition metal oxides (pg. 4, [0046]), a nonaqueous electrolyte (pg. 4, [0039]) and a separator (pg. 4, [0039]). The second lithium transition metal oxide has an average discharge voltage of at least 0.05V or more than that of the first lithium transition metal oxide (pg. 2, [0018]) and the preferred amount of the second lithium transient metal oxide is in the range of 4-50% (pg. 9, [0124]). This prior art range encompasses the claimed range of 5-20%. The courts have held that in the case where “prior art reference that discloses a range encompassing a somewhat narrower claimed range is sufficient to establish a *prima facie* case of obviousness.” *In re Peterson*, 315 F.3d 1325, 1330, 65 USPQ2d 1379, 1382-83 (Fed. Cir. 2003). Furthermore, HOSOYA et al. teaches the mixing ratio as being a results effective variable in that when the range is less than 4% it is difficult to sufficiently lower the cathode potential causing degradation of over-discharge resistance, and wherein second composite oxide material is greater than 50%, a discharge curve is shifted toward a low voltage side, and the battery becomes susceptible to lowering of battery capacity (pg. 9, [0124]). The courts have held that optimization of a results effective variable is not novel. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Furthermore, it is the position of the Examiner that properties of the cathode active materials, such as the average discharge voltage of the first material compared to that of the second material and the discharge end voltage of the nonaqueous battery being within 2.5V to 3V, are inherent, given that the active materials disclosed by OISHI et al., YAMASHITA et al. and HOSOYA et al. and the present application have the same chemistry. Inherency is not established by probabilities or possibilities. *In re Robertson*, 49 USPQ2d 1949 (1999).

As to Claim 4, OISHI et al. does not expressly disclose the composition of the first active

Art Unit: 1795

material expressed in claim 4.

However, YAMASHITA et al. teaches a nonaqueous electrolyte battery comprising a positive active material of $\text{Li}_x[\text{CoNi}]_{1-y}\text{Mn}_y\text{O}_2$ wherein $0 \leq y \leq 1$ (col. 8, lines 16-26). These ranges overlap or lie inside the claimed ranges of the present application. The courts have held that in the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to substitute the active material of YAMASHITA et al. ($\text{Li}_x[\text{CoNi}]_{1-y}\text{Mn}_y\text{O}_2$) for the first active material of OISHI et al., because YAMASHITA et al. teaches that this will achieve a battery which is excellent in discharging characteristics at a high current density and cycle characteristics (co.. 3, lines 1-2). Furthermore, YAMASHITA et al. is clearly teaching that active materials for nonaqueous batteries such as $\text{Li}_x[\text{CoNi}]_{1-y}\text{Mn}_y\text{O}_2$ and Li_xNiO_2 are considered functionally equivalent. Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to substitute the $\text{Li}_x[\text{CoNi}]_{1-y}\text{Mn}_y\text{O}_2$ active material of YAMASHITA et al. for the first active material of OISHI et al., because YAMASHITA et al. teaches that they are recognized equivalents.

Response to Arguments

7. Applicant's arguments with respect to claims 3-4 have been considered but are moot in view of the new ground(s) of rejection as necessitated by Applicant's amendments to the claims.

Applicant's principal arguments are:

Art Unit: 1795

a) the composition of the alleged second active material of Hosoya is different from the claimed second active material (claim 3).

In response to Applicant's arguments, please consider the following comments.

a) the teachings of Hosoya et al. were used to modify the proportion of two positive active materials in a nonaqueous battery and how the varying the amounts is a results effective variable.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 1795

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADAM A. ARCIERO whose telephone number is (571)270-5116. The examiner can normally be reached on Monday to Friday 8am to 5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AA

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795